

Atty. Dkt. AMAT/5975.P2/CPI/L/B/PJS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Ganguli, et al.

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Group Art Unit: 1762

Serial No.: 10/811,230

Confirmation No.: 8995

Examiner:

Unknown

Filed:

March 26, 2004

For:

Ruthenium Layer

Formation for Copper Film

Deposition

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Date

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Respectfully submitted,

Keith M. Tackett

Registration No. 32,008

MOSER, PATTERSON & SHERIDAN, L.L.P.

3040 Post Oak Blvd. Suite 1500

Houston, TX 77056

Telephone: (713) 623-4844 Facsimile: (713) 623-4846 Attorney for Applicant(s)

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Application Number	10/811,230
Filing Date	March 26, 2004
First Named Inventor	Ganguli, et al.
Group Art Unit	1762
Examiner Name	Unknown
Attorney Docket Number	AMAT/5975.P2/CPI/L/B/PJS
Submission Date	September 20, 2004

	U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date		Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	
		Number-Kind Code ^{2 (fl known)}	MM-DD-YYYY			
	A1	US-6713373	03/30/2004	Omstead		
	A2	US-6617634	09/09/2003	Marsh, et al.		
	A3	US-6610568	08/26/2003	Marsh, et al.		
	A4	US-6605735	08/12/2003	Kawano, et al.		
	A5	US-6596602	07/22/2003	lizuka, et al.		
	A6	US-6580111	06/17/2003	Kim, et al.		
	A7	US-6527855	03/04/2003	De La Rosa, et al.		
	A8	US-6482740	11/19/2002	Soininen, et al.		
	A9	US-6479100	11/12/2002	Jin, et al.		
	A10	US-6440495	08/27/2002	Wade, et al.		
•	A11	US-6423619	07/23/2002	Grant, et al.		
	A12	US-6462367	10/08/2002	Marsh, et al.		
	A13	US-6365502	04/02/2002	Paranjpe, et al.		
	A14	US-6063705	05/16/2000	Vaarstra		
	A15	US-5962716	10/05/1999	Uhlenbrock, et al.		
	A16	US-5372849	12/13/1994	McCormick, et al.		
	A17	US-20030165615 ·	09/04/2003	Aaltonen, et al.		
	A18	US-20030096468	05/22/2003	Aaltonen, et al.		
	A19	US-20020173054	11/21/2002	Kim		
	A20	US-20020125516	09/12/2002	Marsh, et al.	,	
	A21	US-20020121697	09/05/2002	Marsh		
	A22	US-20020102810	08/01/2002	lizuka, et al.		
	A23	US-20020081381	06/27/2002	Marsh, et al.		
	A24	US-20020076881	06/20/2002	Marsh, et al.		
	A25	US-20020074577	06/20/2002	Marsh, et al.		
	A26	US-20020028556	03/07/2002	Marsh, et al.		
	A27	US-20020025627	02/28/2002	Marsh, et al.		
· · · · · · · · · · · · · · · · · · ·	A28	US-20020004293	01/10/2002	Soininen, et al.		

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10/811,230 Substitute for form 1449A/PTO **Application Number** Filing Date March 26, 2004 INFORMATION DISCLOSURE First Named Inventor Ganguli, et al. STATEMENT BY APPLICANT Group Art Unit 1762 **Examiner Name** Unknown (Use as many sheets as necessary) Attorney Docket Number AMAT/5975.P2/CPI/L/B/PJS Sheet Submission Date September 20, 2004

	U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.1	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	
		Number-Kind Code ^{2 (if known)}				
	A29	US-20020000587	01/03/2002	Kim, et al.	_	
	A30	US-20010054730	12/27/2001	Kim, et al.		
	A31	US-20010006838	07/05/2001	Won, et al.		

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No.1	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	B1	WO 01/88972	11/22/2001			
	B2	JP 2001-237400	08/31/2001			
	В3	JP 2001-111000	04/20/2001			·

		NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	. I ITEM (DOOK, MADAZINE, IDUMA), SENAI, SYMDOSIUM, CAIAIOO, EIC.), UAIE, DAGEIS), VOIUME-ISSUE	
	C1	Aaltonen, et al., "Atomic Layer Deposition of Ruthenium from RuCp₂ and Oxygen: Film Growth and Reaction Mechanism Studies," Electrochemical Society Proceedings Volume 2003-08 pp. 946-953.	
	C2	Aaltonen, et al., "Atomic Layer Deposition of Ruthenium Thin Films from Ru(thd) ₃ and Oxygen," Chem. Vap. Deposition (2004), 10, No. 4 pp. 215-219.	
	C3	Aaltonen, et al., "Ruthenium Thin Films Grown by Atomic Layer Deposition," Chem. Vap. Deposition (2003), 9, No.1 pp.45-49.	
	C4	Aoyama, et al.; "Ruthenium Films Prepared by Liquid Source Chemical Vapor Deposition Using Bis- (ethylcyclopentadienyl)ruthenium," Jpn. J. Appl. Phys. Vol. 38 (1999) pp. L1134-L1136.	
	C5	Dadgar, et al., "Growth of Ru doped semi-insulating InP by low pressure metalorganic chemical vapor deposition," Journal of Crystal Growth 195 (1998) pp. 69-73.	
	C6	Kwon, et al., "Atomic Layer Deposition of Ruthenium Thin Films for Copper Glue Layer," Journal of the Electrochemical Society, 151 (2) (2004) pp. G109-G112.	
	C7	Kwon, et al., "Plasma-Enhanced Atomic Layer Deposition of Ruthenium Thin Films," Electrochemical and Solid-State Letters, 7 (4) (2004) pp. C46-C48.	
	C8	Lashdaf, et al., "Deposition of palladium and ruthenium β-diketonates on alumina and silica supports in gas and liquid phase," Applied Catalysis A: General 241 (2003) pp. 51-63.	
	C9	Lim, et al.," Atomic layer deposition of transition metals," Nature Materials, Vol. 2 November (2003) pp. 749-754.	
	C10	Shibutami, et al., "A Novel Ruthenium Precursor for MOCVD without Seed Ruthenium Layer," TOSOH Research & Technology Review, Vol. 47 (2003) pp. 61-64.	

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